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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: OTTO, et al. § Group Art Unit: 1764  
Serial No.: 10/792,056 § Examiner: Ellen M. McAvoy  
Filed: 03/03/2004 § Atty. Docket No.: 154-28553-US  
Title: Method for Lubricating and/or Reducing Corrosion of Drilling Equipment

DECLARATION OF MICHAEL OTTO UNDER 37 C.F.R. § 1.132

I, MICHAEL OTTO, declare as follows:

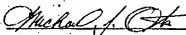
1. I am an inventor in the referenced application. All statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true.
2. I have worked in the oil services industry for almost 34 years. During the past 31 years, I have worked for Baker Hughes Drilling Fluids (and its predecessors, hereafter collectively referred to as "BHDF") in Houston, Texas.
3. My work for BHDF has included product development, research and development, and technical support. I am currently a Senior Technical Advisor at BHDF.
4. During the early 1980's, I was working with a BHDF customer on location in the Imperial Valley of California.
5. At least some of the wells drilled by the BHDF customer in the Imperial Valley were geothermal wells. Geothermal wells can have extremely high bottom hole temperatures (in excess of 500° F).
6. The mud systems used by BHDF to drill geothermal wells in the Imperial Valley during the 1980's comprised high temperature acrylamide based copolymers.
7. While drilling one geothermal well using a BHDF high temperature, copolymer mud system comprising acrylamide copolymer, the mud system was treated with a high temperature, extreme pressure lubricant called "LUBRI-FILM."
8. LUBRI-FILM is an aluminum stearate/lignosulfonate dispersant.

9. The mud system treated with LUBRI-FILM exhibited reduced torque and drag, but also exhibited an abnormal increase in mud viscosity.
10. The abnormal increase in viscosity was believed to be partially due to a solids build up in the mud system. In order to resolve the solids build-up problem, a large portion of the mud system was displaced with new drilling fluid, producing conditioned mud.
11. The conditioned mud was subjected to pilot testing on location at elevated temperatures to evaluate the effect of LUBRI-FILM on the conditioned mud. No abnormal viscosification was observed during the on site pilot testing.
12. Based on the successful pilot test, a minimal treatment of approximately 1 ppb of the LUBRI-FILM was added to the mud system.
13. Within 48 hours after adding the 1 ppb of LUBRI-FILM to the mud system, routine product additions could not be made to the mud system due to the occurrence of abnormal viscosity/abnormal gel strength.
14. All product additions to the mud system were stopped for a period of days to determine what, if any, products could be added to the conditioned fluid.
15. A decision was made to stop using LUBRI-FILM in mud systems comprising acrylamide based polymers and copolymers. This decision was made even though the operator and rig personnel were impressed with the performance of LUBRI-FILM and with its bluing effect on the drill pipe.
16. The need remained for an extreme pressure lubricant that could be used to treat high temperature mud systems comprising acrylamide based polymers and copolymers.
17. I hypothesized that a monovalent fatty acid lubricant might provide extreme pressure lubrication and bluing of the drill pipe without causing an abnormal increase in viscosity.
18. In the early 1990's, I prepared a lithium stearate lubricant and tested it in the BHDF lab using a customer's field mud.
19. The lithium stearate lubricant reacted with and "blued" the metal surfaces to which it was exposed, as seen in the Examples and Figures.
20. The lithium stearate did not cause abnormal viscosification— even in the presence of PYRO-TROL®, an acrylamide (AM), 2-amino-2-methyl propane sulfonic acid (AMPS) copolymer additive.

21. I did not know before the laboratory evaluation whether lithium stearate would react with and blue metal surfaces.

22. In my opinion, other monovalent alkali metals would produce similar results. I understand that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. 1001) and may jeopardize the validity of the application of any patent issuing thereon.

SIGNED this 13 day of February, 2009.

  
MICHAEL OTTO